AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A process for producing a fibre composition comprising a lignocellulosic fibre material containing phenolic or similar structural groups capable of being oxidized, and a synthetic, electrically conductive polymer formed by polymerized monomers, according to which process the monomers are polymerized in the presence of the lignocellulosic fibre material to form a composition in which the polymer is bound to the fibres, characterized by

    a) oxidizing the phenolic groups or the groups having a similar structure to provide an oxidized fibre material,

    b) contacting the oxidized fibre material with a bifunctional substance to provide a modified lignocellulosic fibre material capable of binding monomers of the conductive polymer, and

    c) contacting the modified lignocellulosic fibre material with monomers of the conductive polymer under conditions conducive to polymerization to produce polymer chains of the synthetic, electrically conductive polymer, which are grafted to the surface of the lignocellulosic fibre material,

wherein the bifunctional substance and the monomer are different, and the bifunctional substance has at least two functional groups, where the first functional group participates in the

binding of the modifying compound to the lignocellulosic fibre material and the second functional group forms a primer for binding to the polymeric material.

2. (original): The process according to claim 1, wherein the oxidized fibre material is contacted with the bifunctional monomers of the synthetic, electrically conductive polymer in order to bind the monomers to the surface of the oxidized lignocellulosic fibre material, to provide a modified lignocellulosic fibre material having monomers bound to its surface, and the modified lignocellulosic fibre material is contacted with the monomers to produce polymer chains of the synthetic, electrically conductive polymer, which are grafted to the surface of the lignocellulosic fibre material.

3. (original): The process according to claim 1, wherein the modifying agent is activated with an oxidizing agent.

4. (previously presented): The process according to claim 1, wherein the lignocellulosic fibrous material is reacted with an oxidizing agent in the presence of a substance capable of catalyzing the oxidation of phenolic groups or groups having a similar structure by said oxidizing agent.

5. (previously presented): The process according to claim 1, wherein the reaction of step (a) is carried out in an aqueous phase at a consistency of about 1 to 95 % by weight of the fibre material.

6. (previously presented): The process according to claim 1, wherein the polymer is selected from the group consisting of polyaniline, polypyrrole, polythiophene and polyacetylene and derivatives thereof.

7. (cancelled)

8. (previously presented): The process according to claim 1, wherein the modifying agent comprises at least one phenolic hydroxyl or similar structural group as a first functional group.

9. (previously presented): The process according to claim 1, wherein the second functional group is selected from the group of hydroxy, carboxy, anhydride, aldehyde, ketone, amine, amide, imine, imidine and derivatives and salts thereof.

10. (previously presented): The process according to claim 1, wherein the modifying agent comprises a plurality of second functional groups.

11. (canceled)

12. (canceled).

13. (previously presented): The process according to claim 1, wherein the fibres are selected from lignocellulosic fibres produced by mechanical, chemimechanical or chemical pulping.

14. (previously presented): The process according to claim 4, wherein the substance capable of catalyzing the oxidation of phenolic or similar structural groups to provide an oxidized fibre material is an enzyme.

15. (previously presented): The process according to claim 1, wherein steps (a) to (c) are carried out simultaneously by forming in an aqueous medium a mixture of lignocellulosic fibres and the monomer, oxidizing phenolic or similar structural groups on the lignocellulosic fibres while binding the monomers to the oxidized phenolic or similar structural groups.

16. (previously presented): The process according to claim 14, wherein the enzyme is added to the aqueous medium in order to oxidized the phenolic or similar structural groups.

17. (previously presented): The process according to claim 14, wherein the enzyme capable of catalyzing the oxidation of phenolic groups is selected from the group of peroxidases and oxidases.

18. (previously presented): The process according to claim 14, wherein the enzyme is selected the group of laccases (EC 1.10.3.2), catechol oxidases (EC 1.10.3.1), tyrosinases (EC 1.14.18.1), bilirubin oxidases (EC 1.3.3.5), horseradish peroxidase (EC 1.11.1.7).

19. (previously presented): The process according to claim 17, wherein the enzyme dosage is from about 1 to 100,000 nkat/g, and it is employed in an amount of 0.0001 to 10 mg protein/g of dry matter.

20. (previously presented): The process according to claim 19, wherein the enzyme treatment is carried out at a temperature of 5 – 100 ^{o}C and pH 3 – 12.

21. (previously presented): The process according to claim 3, wherein the oxidizing agent is selected from the group of oxygen and oxygen-containing gases selected from the group consisting of air and hydrogen peroxide.

22. (original): The process according to claim 21, wherein oxygen or oxygen-containing gas or hydrogen peroxide is introduced into the aqueous slurry during the reaction.

23. (previously presented): The process according to claim 1, wherein a chemical oxidizing agent is used.

24. (previously presented): The process according to claim 22, wherein the chemical oxidizing agent is hydrogen peroxide, Fenton reagent, potassium permanganate, ozone and chloride dioxide or an inorganic transition metal salt, ammoniumperoxy sulphate.

25. (previously presented): The process according to claim 1, wherein said oxidizing step comprises radiating the lignocellulosic fibre matrix employing radical forming radiation capable of catalyzing the oxidation of phenolic or similar structural groups to provide an oxidized fibre material.

26. (previously presented): The process according to claim 1, wherein the reaction steps are carried out sequentially or simultaneously.

27. (previously presented): The process according to claim 19, wherein the enzyme dosage is from 10-500 nkat/g.

28. (previously presented): The process according to claim 20, wherein the enzyme treatment is carried out at a temperature of 10-85°C.

29. (previously presented): The process according to claim 20, wherein the enzyme treatment is carried out at a temperature of 20-80°C.

30. (previously presented): The process according to claim 6, wherein the derivatives are selected from alkyl derivatives, aryl derivatives, chlorine substituted derivatives, or bromine substituted derivatives.